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SECTION VII.—WEATHER AND DATA FOR THE MONTH.

THE WEATHER OF JANUARY, 1917.

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PRESSURE AND WINDS.

The distribution of the mean atmospheric pressure over the United States and Canada and the prevailing direction of the winds are graphically shown on Chart VII, while the average values for the month at the several stations, with the departures from the normal, are shown in Tables I and III.

For January as a whole the barometric pressure averaged above the normal west of the Rocky Mountains and over much of Texas and the Florida Peninsula, but elsewhere it was below the average. The minus departures were not large, but the plus departures were generally more marked, the greatest values appearing in the central Plateau region and north Pacific States, where high barometric pressure persisted for much of the month.

The month opened with relatively low pressure throughout the northern border States and the Canadian Provinces; elsewhere it was near the normal, except in the southern Plateau region and the extreme southeastern States, where it was above the average. Low pressure predominated in practically all sections during the next few days, and continued in most northern and eastern districts during the remainder of the first decade, but in the western districts, except in the extreme northern portion, it was generally high. At the beginning of the second decade pressure was low in the eastern portion of the country and in the far Northwest, while it was above the normal elsewhere. High pressure predominated during the greater part of this decade throughout the country, except in the extreme Southwest, where low readings obtained during much of the time, and along the northern border where high and low pressure areas prevailed successively at rather frequent intervals. Several extensive lows crossed the country during the third decade, but otherwise the pressure was near the normal during much of that period. The month closed with low pressure over the eastern half of the country, except in the northern Lakes Region, where it was above the normal, and it was also low in the southern portion of the western half of the country. Elsewhere it was above the normal, with a rather extensive high overlying the Northwest.

The distribution of the HIGHS and LOWS was generally favorable for southerly winds in the South Atlantic and Gulf States, and also in the Ohio and lower Mississippi Valleys, lower Lakes Region and along the northern Pacific coast, while westerly and northwesterly winds were frequent in the New England and Middle Atlantic States, the Upper Mississippi and Missouri Valleys, and over the upper Lakes Region. Elsewhere variable winds prevailed.

TEMPERATURE.

During the first decade of the month the temperature averaged considerably warmer than the normal, except in the Plateau region, and during the third decade it was

again warmer than usual in the southeastern districts. From the 11th to the 22d, however, the weather averaged colder than usual in all sections, except Florida, this being one of the coldest periods on record in portions of the Rocky Mountain and Plateau regions. It was abnormally cold in California during the entire month, and frequent injurious frosts occurred in nearly all sections of that State, and similar conditions prevailed in Nevada and portions of adjoining States. The high pressure areas that followed the storms of the 5th, 10th, 22d, and 31st, respectively, were accompanied by sharp drops in temperature. On the 10th, freezing weather prevailed in northern Florida and light frost occurred as far south as Miami, while on the 15th abnormally low temperatures prevailed in all parts of the country except Florida. The last cold wave of the month reached the northwestern border of the United States on the 29th. It was of unusual intensity and was spreading rapidly southeastward at the close.

For the month as a whole the temperature was below the average from the Rocky Mountains westward, except in portions of Oregon and Washington where it was normal or slightly above, and also in most of the northern border States to the eastward. Abnormally cold weather persisted in the central portions of the Plateau region, the monthly means ranging from 10° to 15° daily below the normal. Over the central and southern districts to eastward of the Rocky Mountains the monthly averages were above the normal.

PRECIPITATION.

At the beginning of the month light rain or snow prevailed in the central Valleys and Lake region, but during the next few days, it was generally fair in most sections. About the middle of the first decade a storm moved from eastern Texas northeastward and was accompanied by general rain or snow, with thunderstorms in the central valleys and a tornado in Oklahoma, the rainfall being heavy in the lower Ohio Valley. Moderately heavy snow fell in the Lakes Region about the end of the first decade. Toward the middle of the second decade heavy rains fell in Mississippi and Alabama, and widespread precipitation and high winds occurred in the Lakes Region and to the eastward. Near the end of the second decade and during the first few days of the third, a storm moved with increasing intensity from the south Pacific coast, northeasterly to the Great Lakes and thence down the St. Lawrence Valley. It was accompanied by widespread rains and snows, the snowfall being unusually heavy in South Dakota, Minnesota, and northern Iowa. Heavy rains and thunderstorms occurred in southern Georgia and western Florida on the 23-24, and during much of the latter half of the third decade cloudy weather, with light precipitation, prevailed in the northern border States.

For the month as a whole the precipitation was below the normal in practically all sections, except that in Arizona and western New Mexico, and also from the Central Gulf States northeastward to the Ohio Valley it was somewhat above the average.

SNOWFALL.

Snow was heavy in portions of the upper Mississippi Valley and Lakes Region and likewise in northern New York and much of northern New England, but in most other eastern sections it was abnormally light. In portions of the Rocky Mountains there was a good increase in the stored snow supply, but in other western districts, especially in California and portions of adjacent States, the snowfall for the month was the lightest in years. However, the accumulated snow depths to the end of January in most of the higher mountains, particularly in the northern districts, were generally above normal, and a plentiful supply of water during the coming summer is indicated.

RELATIVE HUMIDITY.

The month was drier than usual from central and western Texas northeastward to the Great Lakes; also in New England, the Middle Atlantic States, central California, and the northern part of the Plateau and Pacific Coast States the relative humidity was mostly below the normal. Over the southeastern and far southwestern portions of the country, as well as throughout the Great Plains and Rocky Mountain States, the relative humidity was generally above the normal.

GENERAL SUMMARY.

Farm work was well advanced in Florida during January, but the weather was too wet to accomplish much in the other Southern States from the lower Mississippi eastward, and conditions were also unfavorable in California.

The winter grain fields were well covered with snow in the Northern States and were in good condition, except from the Ohio Valley eastward, where there was a lack of snow cover and the late-sown grains were somewhat injured by alternate freezing and thawing. In the Southern States the weather was generally favorable for fall-sown grains, although the late-sown in portions of Kansas and Oklahoma are in poor condition. Dry weather was unfavorable for the truck crops in Florida, and it was too wet and cloudy for the best development of winter vegetables in the lower Mississippi Valley, but favorable weather obtained in Georgia and the Carolinas. Frequent frost damaged citrus fruit and vegetables in California, and dry weather caused damage to the same crops in Florida.

The intense cold during the middle of the month caused loss of live stock in Wyoming and portions of Missouri and New Mexico. The harvesting of ice progressed favorably in the Northern and Northeastern States and a crop of excellent quality was housed.

SEVERE LOCAL STORMS.

The following notes of severe storms have been extracted from official reports of the Weather Bureau:

Oklahoma.—On January 4, 1917, about 11 a. m., a tornado, with a well-developed, pendant, funnel-shaped cloud, devastated a strip of country about 200 yards wide and 6 to 7 miles long in Pittsburg County. At Richville some mine buildings and machinery were wrecked, and several persons injured. A small frame school building at Vireton was completely demolished, 11 children killed, and 12 other persons injured, 4 of whom subsequently died. Not a vestige of the schoolhouse remained, and the bodies of some of the children were found

100 yards from the site of the building. Several farm-houses in the vicinity were wrecked, but the occupants were not seriously injured. The buildings destroyed were inexpensive and the property loss did not exceed \$10,000.

Average accumulated departures for January, 1917.

Districts.	Temperature.			Precipitation.			Cloudiness.		Relative humidity.	
	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure from the normal.	General mean for the current month.	Departure from the normal.
	° F.	° F.	° F.	In.	In.	In.	0-10		P. ct.	
New England.....	25.3	+ 0.9	+ 0.9	3.17	-0.30	-0.30	6.7	+0.7	74	- 2
Middle Atlantic.....	34.1	+ 2.5	+ 2.5	2.90	-0.30	-0.30	6.3	+0.9	72	- 4
South Atlantic.....	50.8	+ 5.6	+ 5.6	3.10	-0.80	-0.80	6.0	+0.7	81	+ 5
Florida Peninsula.....	69.4	+ 4.9	+ 4.9	0.30	-2.40	-2.40	2.8	-2.0	82	0
East Gulf.....	53.4	+ 6.1	+ 6.1	5.50	+0.50	+0.50	6.5	+0.8	81	+ 4
West Gulf.....	50.4	+ 4.2	+ 4.2	1.45	-1.50	-1.50	6.2	+0.8	75	0
Ohio Valley and Tennessee.....	35.9	+ 2.8	+ 2.8	5.30	+1.50	+1.50	6.6	+0.1	78	+ 1
Lower Lakes.....	24.1	- 0.2	- 0.2	2.65	0.00	0.00	7.1	-0.4	80	0
Upper Lakes.....	16.1	- 2.2	- 2.2	1.31	-0.70	-0.70	6.3	-0.7	83	+ 1
North Dakota.....	1.9	- 2.0	- 2.0	0.58	0.00	0.00	5.6	+0.6	86	+ 5
Upper Mississippi Valley.....	21.7	- 0.9	- 0.9	1.46	-0.20	-0.20	5.3	-0.3	77	- 1
Missouri Valley.....	24.1	+ 3.0	+ 3.0	0.95	0.00	0.00	4.4	-0.7	79	0
Northern slope.....	17.4	- 1.7	- 1.7	0.76	-0.10	-0.10	5.6	+0.4	71	- 2
Middle slope.....	31.9	+ 2.8	+ 2.8	0.34	-0.40	-0.40	4.0	-0.3	65	- 3
Southern slope.....	43.8	+ 2.3	+ 2.3	0.42	-0.30	-0.30	4.8	+0.3	58	- 6
Southern Plateau.....	37.9	- 2.8	- 2.8	0.84	+0.10	+0.10	4.1	+0.6	69	+17
Middle Plateau.....	16.7	-11.7	-11.7	0.69	-0.40	-0.40	4.4	-1.0	78	+ 6
Northern Plateau.....	25.0	- 3.8	- 3.8	1.06	-0.60	-0.60	6.8	-0.1	78	- 2
North Pacific.....	38.8	- 1.2	- 1.2	4.00	-2.70	-2.70	7.7	+0.1	86	0
Middle Pacific.....	44.1	- 3.2	- 3.2	2.50	-2.20	-2.20	3.6	-2.3	68	-13
South Pacific.....	48.5	- 2.4	- 2.4	3.00	-0.30	-0.30	5.0	+0.3	74	+ 3

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WEATHER CONDITIONS OVER THE NORTH ATLANTIC OCEAN DURING JANUARY, 1916.

The data furnished are for January, 1916, and comparison and study of the same should be in connection with those appearing in the Review for that month. Chart IX (xlv-9) shows for January, 1916, the averages of pressure, temperature, and prevailing direction of the wind at 7 a. m. 75th meridian time (Greenwich mean noon), together with notes on the locations and courses of the more severe storms of the month.

PRESSURE.

The distribution of the average monthly pressure as shown on Chart IX differed considerably from the normal in several respects. There was no area of average high pressure in the vicinity usually occupied by the North Atlantic HIGH, while a well-developed HIGH of limited area, with a crest of 30.41 inches was central near the Atlantic coast of Spain and Portugal. Two HIGHS of about equal intensity and extent existed in the southwestern part of the ocean. The first was central about 5 degrees west of Bermuda, and the second near the coast of North Carolina. The crest of each of these HIGHS was 30.31 inches, and there was a shallow trough between them with an average of 30.28 inches. The Icelandic low was apparently nearly normal as to position and intensity, as an isobar of 29.5 inches was only slightly west of that of 29.6 inches, as shown on the normal chart. The lowest average monthly pressure reading for any one 5-degree square was 29.48 inches, and occurred in the square be-

tween latitude 55°-60° and longitude 35°-40°, where the lowest individual reading during the month was 28.76 inches on the 1st, and the highest 30.38 inches on the 11th. The highest average pressure was 30.41 inches, in the square between latitude 40°-45°, longitude 5°-10° west, where the lowest reading was 30.11 inches, on the 17th, and highest 30.60 inches from the 9th to the 12th, inclusive. The gradient between these two extremes was considerably steeper than usual, while in the waters adjacent to the American coast there was little difference in pressure between the 30th and 45th parallels, as the entire region was surrounded by an isobar of 30.2 inches, as shown on Chart IX. While the usual rapid winter pressure changes occurred from day to day in the northern waters, the averages for the three decades of the month did not differ quite as much as in some previous years, as over the greater part of the ocean high and low readings were fairly well distributed throughout the month. In the 5-degree square between latitude 55°-60°, longitude 0°-5° west, the average reading for the first decade was 29.59 inches, the second 29.68 inches, and the last 11 days 29.92 inches, while the average for the month was 29.73 inches. In the square between latitude 45°-50°, longitude 35°-40°, the averages were as follows: First decade, 29.79 inches, second 29.55 inches, last 11 days 29.75 inches, and monthly average 29.70 inches. In the square between latitude 40°-45°, longitude 65°-70°, the figures were: First decade 30.09 inches, second 30.08 inches, the last 11 days 30.32 inches, and the monthly average 30.16 inches. In the square between latitude 40°-45°, longitude 45°-50°, they were: First decade 29.80 inches, second 29.73 inches, and last 11 days 30.12 inches, and the monthly average 29.89 inches. In the southern waters the variation in pressure was, as usual, not great, and in the Gulf of Mexico the extreme range was comparatively small.

GALES.

January is considered the stormiest month of the year on the North Atlantic, and in January, 1916, the number of gales occurring over the greater part of the steamer lanes was considerably above the normal, while in the waters adjacent to the American coast they were somewhat less than usual, the same conditions holding true in European waters. The maximum number of gales occurred in the 5-degree square between latitude 45°-50°, longitude 35°-40°, where winds of 48 miles an hour or over were reported on 16 days, a percentage of 52, while the normal percentage is 33. In the two adjoining squares, on the east and west, the percentage of gales was 45 and 48, respectively, which in both cases was considerably above the normal.

In the vicinity of Cape Hatteras gales were reported on only two days, which is most unusual for that locality. The irregular distribution of winds of gale force was undoubtedly due to the abnormal conditions as shown on Chart IX. The steep gradient between the HIGH, off the coast of France and Spain, and the Icelandic Low was responsible for the unusual number of days with heavy winds that were reported from the intermediate territory, while in the large area of high pressure that covered the American coast during the greater part of the month light variable and southwest winds prevailed north of the 30th parallel.

While, as above stated, January, 1916, was an unusually stormy month over the greater part of the ocean, it

was possible to show but one storm track on Chart IX, as in some cases the centers of the LOWS were too far north to plot, on account of lack of observations, and in other instances the movement of the storm areas from day to day was too irregular and uncertain to show on the chart with any degree of accuracy.

From January 1 to 3 there was a large area of low pressure over the northwestern part of the ocean; moderate gales with hail and snow prevailed on the 1st between St. Johns, N. F., and the 40th meridian, while two vessels near the south coast of Ireland experienced southwest gales of 60 miles an hour. By the 2d the weather had moderated, although heavy winds were still reported from the vicinity of the English Channel, while on the 3d they covered a small area between the 45th and 52d parallels and the 25th and 30th meridians.

On January 3 a LOW (1 on Chart IX) was central near latitude 42, longitude 61, which was of light intensity, with moderate to fresh winds, accompanied by snow. On the 4th the approximate center of this LOW was near latitude 44, longitude 50. Moderate to strong gales covered a narrow strip from Bermuda to Halifax, while similar conditions existed over a limited area about 5 degrees south of its center. The disturbance then curved toward the southeast and on the 4th was near latitude 48°, longitude 42°; it had contracted in extent and increased in intensity since the previous day, and heavy winds were encountered between the 45th and 50th parallels, and from St. Johns, N. F., to the 51st meridian. This low evidently continued in its northerly course, as on the 5th it did not appear within the limits of the chart.

The center of a HIGH with a crest of 30.55 inches was near Corunna, Spain, on the 6th, and a number of vessels near the 50th parallel, and between the 15th and 20th meridians, experienced southwest gales, while their barometer readings ranged from 30.07 inches to 30.25 inches. A second HIGH with a crest of 30.42 inches was central about 10° east of Bermuda, and there was a LOW of 29.90 inches near latitude 30, longitude 41. One vessel in the northwest quadrant of this LOW reported a northeasterly gale of over 60 miles an hour, and another about midway between the centers of the LOW and the second HIGH recorded a northerly wind of about 50 miles an hour. From the 7th to the 9th, inclusive, no unusual conditions existed, and the winds ranged from light to moderate over practically the entire ocean. On the 10th a tongue of low pressure extended from the 30th parallel toward the north, covering the region between the 40th and 55th meridians. This area was situated between two HIGHS, the first with a crest of 30.30 inches, central near latitude 38°, longitude 68°, and the second with a crest of 30.70 inches, near latitude 46°, longitude 16° W. The steep gradient between the LOW and the second HIGH caused heavy winds in the intermediate territory. On the 11th and 12th the conditions were not dissimilar to those of the 10th, although the winds were comparatively light over the entire ocean. On January 13th the LOW was well developed, being central about 7 degrees east of St. Johns, N. F., gales of from 40 to 50 miles an hour extended as far south as the 35th parallel between the 40th and 60th meridians. From the 14th to the 16th, inclusive, this disturbance remained nearly stationary in position, although by the 15th it had increased in intensity, as heavy northwest gales, accompanied by snow and hail, were encountered in a limited territory north of the 40th parallel, and west of the 50th meridian. On the 16th the storm area had increased to a marked ex-

tent and violent gales were encountered between the 30th and 55th meridians, one vessel about 10° east of St. Johns, N. F., recording a northwest hurricane of 90 miles an hour. This LOW moved rapidly in a north-easterly direction, and on the 17th the center with a pressure reading of 28.85 inches was near latitude 55°, longitude 27°. On this date a second LOW of 29.26 inches was central near Halifax, N. S., and a slight ridge existed between the two areas, while at the same time the center of a HIGH with a crest of 30.40 inches was near latitude 35°, longitude 37. Gales ranging in force from 40 to 65 miles an hour prevailed over the entire ocean north of the 40th parallel and east of the 55th meridian, while they were also reported in the vicinity of the Bermudas. On the 18th only one LOW was shown on the chart and that was central near latitude 55°, longitude 39°. The HIGH had moved slightly toward the east, and occupied the region between the Madeiras and the Azores. The crest of this HIGH had increased to 30.64 inches, while the LOW remained about the same in intensity. Over the steamer routes the conditions of winds and weather did not differ materially from those of the previous day, although winds of gale force did not extend east of the 20th meridian, or south of the 35th parallel. On the 19th this LOW was near the north coast of Scotland, but the center was too far north to determine, on account of lack of observations. A second LOW of slight intensity surrounded the Gulf of St. Lawrence, while the HIGH had remained practically unchanged in position and intensity since the previous day. The storm area had decreased since the 18th, although gales were still encountered over the greater portion of the steamer lanes.

On the 20th a LOW was central near latitude 55°, longitude 35°, and the weather conditions were almost the same as on the day before, as heavy gales, with hail and snow, still prevailed over nearly all the region north of the 45th parallel. On the 21st and 22d the LOW remained about stationary in position and intensity, although the storm area had contracted somewhat in extent since the 20th. From the 23d to the 25th, inclusive, a LOW of slight intensity existed over the northern routes, although it was impossible to plot the centers on account of lack of observations. Gales prevailed over the greater part of this territory on the 23d and 24th, but the number gradually decreased, and on the 25th only moderate to fresh winds were reported, with the exception of the limited region between latitudes 55°-60°, longitudes 5°-15° W., where three vessels encountered southwest gales of from 50 to 60 miles an hour. On the 26th this LOW was apparently central between Iceland and the Scandinavian Peninsula; its intensity had diminished since the day before, as moderate gales were reported by only two vessels near the north coast of Scotland, while unusually favorable weather prevailed over the steamer routes.

On January 27 and 28 a LOW of large extent and slight intensity was central in mid-ocean, between the 50th and 55th parallels. By the 29th this disturbance, whose center was now near latitude 50°, longitude 40°, had increased in intensity, and moderate to strong gales prevailed over a large area west of the 25th meridian, while snow and hail occurred off the Banks of Newfoundland. On the 30th the center of this LOW was between the 55th and 60th parallels, and the 30th and

35th meridians; the storm area extended as far south as the 43d parallel, covering the southeast and southwest quadrants, where heavy gales with hail and snow still raged. The movement of this LOW was slight during the next 24 hours, and its intensity diminished to a marked degree, as on the 31st there was a considerable decrease in the number of observations showing winds of gale force.

TEMPERATURE.

The mean monthly temperature of the air over the ocean was above the normal for the entire region north of the 25th parallel, and in many localities the positive departures were large. In the waters adjacent to the European coast these departures ranged from +5° to +7°, while they were somewhat less in mid-ocean. Along the American coast they ranged from +2° off the Banks of Newfoundland, to +7° at the 40th parallel, and from +4° to +10° in the Gulf of Mexico. The temperature departures at a number of Canadian and U. S. Weather Bureau stations on the Atlantic and Gulf coasts were as follows:

	° F.
St. Johns, N. F.....	-2.0
Sydney, C. B. I.....	+3.3
Halifax, N. S.....	+2.0
Eastport, Me.....	+2.5
Portland, Me.....	+4.6
Boston, Mass.....	+6.0
Nantucket, Mass.....	+1.8
Block Island, R. I.....	+3.2
New York, N. Y.....	+5.2
Norfolk, Va.....	+6.6
Hatteras, N. C.....	+5.4
Charleston, S. C.....	+6.6
Key West, Fla.....	+5.0
Tampa, Fla.....	+9.6
Pensacola, Fla.....	+5.9
New Orleans, La.....	+8.3
Galveston, Tex.....	+5.7
Corpus Christi, Tex.....	+6.9

The lowest temperature reported by any vessel during the month was 15°, and occurred on the 29th off the coast of Labrador, while highest for the same 5°-square was 36°, on the 14th.

FOG.

The amount of fog reported during January, 1916, was considerably less than usual in most cases, although in the 5° square that includes Halifax it was observed on three days, or a percentage of 10, which was practically normal. Off the Banks of Newfoundland, however, where under normal conditions the percentage ranges from 30 to 35, during the month under discussion it was observed on only two days, a percentage of 6. The steamer lanes were practically free from fog, and it was reported on two days in the Irish Channel and on five days in the 5°-square between latitude 45°-50°, longitude 10°-15° west.

PRECIPITATION.

There was an unusual amount of snow over the western part of the ocean, as it was observed on from 6 to 13 days between the 40th and 50th parallels and the 40th and 60th meridians, while the waters east of the 40th meridian were comparatively free. Hail was observed on 10 days in the 5° square between latitude 45°-50°, longitude 35°-40°, where the maximum amount occurred, while east of the 25th meridian it was comparatively rare.

Winds of 50 Mis./hr. (22.4 m./sec.), or over, during January, 1917.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		<i>Mis./hr.</i>				<i>Mis./hr.</i>				<i>Mis./hr.</i>				<i>Mis./hr.</i>	
Block Island, R. I.	3	54	se.	Cheyenne, Wyo...	25	58	w.	New York, N. Y...	13	51	s.	Point Reyes,			
Do.....	18	56	w.	Do.....	27	57	w.	Do.....	14	66	s.	Light, Cal.....	30	52	nw.
Do.....	19	60	nw.	Do.....	28	56	w.	Do.....	18	50	nw.	Portland, Me.....	14	68	se.
Do.....	22	54	nw.	Do.....	29	64	w.	Do.....	19	53	nw.	Providence, R. I...	19	52	nw.
Buffalo, N. Y....	7	56	sw.	Columbus, Ohio...	23	50	w.	Do.....	23	68	nw.	Do.....	22	52	sw.
Do.....	8	64	sw.	Detroit, Mich...	22	54	w.	Do.....	26	51	nw.	Sandusky, Ohio...	22	52	sw.
Do.....	14	50	w.	Eastport, Me.....	14	50	s.	North Head,				Sandy Hook, N. J...	3	52	se.
Do.....	16	56	w.	Erie, Pa.....	5	53	sw.	Wash.....	1	66	s.	Do.....	14	62	s.
Do.....	17	70	w.	Do.....	23	58	sw.	Do.....	4	58	se.	Do.....	22	54	w.
Do.....	18	66	sw.	Green Bay, Wis...	21	56	n.	Do.....	21	50	nw.	Savannah, Ga.....	11	50	nw.
Do.....	19	58	w.	Kansas City, Mo...	10	51	nw.	Do.....	26	53	s.	Sioux City, Iowa...	10	60	nw.
Do.....	22	90	w.	Lexington, Ky....	5	52	s.	Do.....	28	52	w.	Do.....	31	51	nw.
Do.....	25	58	sw.	Lincoln, Nebr...	10	50	nw.	Do.....	29	64	nw.	Syracuse, N. Y....	22	50	w.
Cheyenne, Wyo...	1	52	sw.	Louisville, Ky....	21	50	w.	Do.....	30	58	nw.	Tatoosh Island,			
Do.....	2	56	w.	Milwaukee, Wis...	21	53	e.	Do.....	31	58	se.	Wash.....	4	57	s.
Do.....	5	54	w.	Mount Tamalpais,				Oklahoma, Okla...	21	54	w.	Do.....	26	54	s.
Do.....	6	61	w.	Cal.....	5	50	se.	Pittsburgh, Pa...	22	53	w.	Do.....	28	58	w.
Do.....	8	78	w.	Do.....	15	56	ne.	Point Reyes				Do.....	29	64	w.
Do.....	9	52	w.	Do.....	16	54	ne.	Light, Cal.....	2	52	se.	Do.....	31	56	s.
Do.....	11	52	w.	Do.....	21	84	nw.	Do.....	3	50	nw.	Toledo, Ohio.....	21	55	sw.
Do.....	19	54	w.	New York, N. Y...	3	60	se.	Do.....	5	56	se.	Do.....	22	56	sw.
Do.....	23	52	w.	Do.....	6	60	nw.	Do.....	20	62	nw.	Trenton, N. J.....	14	51	sw.
Do.....	24	53	w.	Do.....	11	50	nw.	Do.....	21	78	nw.	Williston, N. Dak...	9	51	nw.